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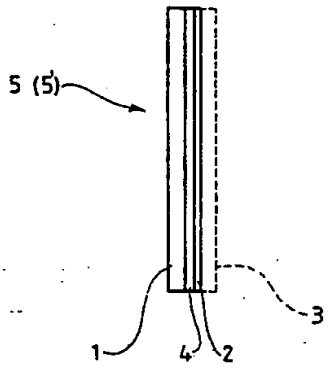

(57) Abstract

A fluorescent foil (5, 5'), especially of the kind made from a translucent/transparent foil material admixed colouring matter and fluorescent matter, and wherein the foil (5, 5'), at least at one side thereof, is provided with a translucent layer (4), e.g. consisting of bencotriasole or benzophone, which is impermeable or substantially impermeable to ultraviolet rays (UV-rays). Preferably, the layer (4) is placed between the fluorescent foil (5, 5') and a translucent adhesive layer (2). Also, the invention comprises signboards, e.g. name and/or advertisement signboards, comprising a translucent disc (6) having attached thereto a fluorescent foil (5, 5') as defined above, wherein the translucent disc (6), at both sides thereof, has attached thereto fluorescent foils (5, 5') having different colour or colours on the two sides, and being cut to letter, figure or other constituents which, at one side (6') of the translucent disc (6), are attached in correctly facing design, while the cooperating/completing letter, figure or other constituents in opposing positions on the other side (6'') of the translucent disc (6), are attached in mirror-symmetrical relationship thereto.

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FLUORESCENT FOIL

This invention relates to a fluorescent foil, especially for use within the sign and advertising trade, and particularly of the kind further defined in the preamble of the following claim 1.

In one field of application for such fluorescent foils within the sign and advertising trade, the foil is cut to letters and/or figures, emblems, logograms and the like which are adhered onto e.g. a window pane or a corresponding disc or plate of glass, plexiglass or similar transparent/ translucent materiale which thereby constitutes a carrier for the sign/advertisement. In order to give the sign/ advertisement the desired glowing neon-like effect, the same must be illuminated by means of socalled invisible or black light.

There exists adhesive fluorescent foils of this kind. These known sign/advertisement-foils are white and non-translucent. At one side face thereof, a layer of fluorescent matter has been applied to these foils, the opposite side face carrying an adhesive layer having an external protective paper layer to be torn off and which serves to protect the adhesive layer prior to the time of use.

When adhered onto e.g. a glass or plexiglass pane, these known foils in the form of letters and/or figures will exhibit a front face (the external surface of the fluorescent layer) and a rear side (the interface between the adhesive layer and the adjacent pane face), the intermediate, carrying, white and non-translucent foil layer preventing illumination through the layers when said front face is illuminated by black light. The sign and/or advertising letters etc. have the very same shape as seen from said rear side, but an attractive "advertising effect" cannot be obtained there, this representing an obvious disadvantage in the fields of application concerned.

Likewise, it represents a serious disadvantage and a limitation of use that the illuminating source for black light must be positioned at that side to which the fluorescent layer is facing. With such an external or outdoor positioning of the light source, the latter is subjected to theft and wilful damage, and the placement of such signs and/or advertisement on cars is practically out of the question. With outdoor sign/advertisement, the absolutely necessary external positioning of the fluorescent layer will cause its deterioration, wearing and damage through external influences, sun, weather and wind.

These deficiencies, disadvantages and application limitations in adhesive fluorescent sign/advertisement-foils are in so far remedied to a certain degree by means of a foil of the kind concerned made of a translucent foil material admixed colouring matter and fluorescent matter. Such a foil is disclosed in Norwegian patent application No. 902755 (not published).

Nevertheless, the adhesive fluorescent foil according to Norwegian patent application No. 902755 has application limitations and, thus, cannot be used to create special

decorative effects such as - when adhering two corresponding mirror-symmetrical overlapping foil letters/figures, one at each side of a glass or plexiglass pane - the two mirror-symmetrical letters/figures being given a different colour, and wherein one may alternate between the colours singly and in combination through alternating illumination from two illumination sources for black light, one at each side of said pane.

The fluorescent foil according to Norwegian patent application No. 902755 is not protected against UV-radiation; this shortening its useful life substantially.

Therefore, the object of the present invention has i.a. been to provide a fluorescent foil of the kind concerned wherein disadvantages, deficiencies and application limitations of prior art technique generally and the technical teachings of Norwgian patent application No. 902755 specially are eliminated or reduced in a decisive degree, as well as additionally providing fluorescent foils usable for a wide variety of purposes within the trade concerned, thereby achieving very attractive and surprisingly decorative and illustrative effects.

In accordance with the invention, said objects are realized by means of a fluorescent foil of the kind defined in the preamble of claim 1 and which distinguishes itself through the features appearing from the characterizing part of claim 1.

A further development of the invention consists in that the translucent layer impermeable or substantially impermeable to UV-radiation is placed between the fluorescent foil and a translucent adhesive layer. This further development of the invention is the subject matter of a sub claim.

The invention also comprises a signboard, e.g. a name or advertising signboard comprising a translucent disc having at both sides attached fluorescent foils formed according to the invention, and having different colour or colours at the two sides, as well as being cut to letter, figure or other constituents (components, parts), which at one side of the translucent disc are attached right side up, while the cooperating/completing letter, figure or other constituents in opposed positions at the other side of the translucent disc are attached in a mirror-symmetrical relationship to the first-mentioned letter constituents etc.

This has been made the subject matter of a further sub claim.

The substantial novel technical effect obtained by means of the present invention consists in that one by means of the fluorescent translucent coloured foils cut in the form of letters, figures, emblems, logograms etc. makes possible their neon-like glowing in different colours at different times, so that particularly conspicuous advertising-technical effects are achieved, said effects - apart from the alternating colous - give a three-dimentional effect wherein the apparent depth far exceeds the thickness of the foils plus the glass or plexiglass pane/disc they have been adhered unto. These effects will be further explained in connection with the following description when reference is being made to illustrative drawing figures.

A very important side effect with the fluorescent foil according to the invention consists in its substantially prolonged useful life in association with advertisements constantly being subjected to sun beams; a useful life corresponding to several times that of an ordinary foil being obtainable, this being due to the fact that the foil at least at one side is provided with a translucent layer

impermeable or substantially impermeable to ultraviolet rays.

Examples of the embodiment and use of the subject matter of the invention are defined in the following with reference to the accompanying drawings, wherein:

Figure 1 shows a greatly enlarged partial view of a foil according to the invention, as seen toward one side edge;

Figure 2 shows on the very same excessive scale as well as seen toward one side edge a partial view of a glass/plexiglass disc which e.g. may constitute a name and/or advertisement signboard according to the invention or a fixed (window) pane, wherein two sets of identically shaped foil letters, figures or the like having different colours have been adhered in mirror-symmetrically opposing, partly overlapping positions;

Figure 3 shows a stylistic R cut from two differently coloured foils in accordance with the invention, wherein the inner letter core itself, which in per se represents an entire letter, is thought adhered onto one side of a glass or plexiglass disc/pane, the internal and external R-contour portions, which in per se represent an entire letter, are thought adhered onto the opposite side of said disc or pane in mirro-symmetrically opposing positions, surrounding the R-core.

With reference to figure 1, reference numeral 1 denotes a fluorescent foil, especially of the kind made from a translucent foil material admixed colouring matter and fluorescent matter. To one side of the foil, a translucent/transparent adhesive layer 2 has been applied. A tear-off socalled backing paper 3, e.g. of silicone paper, serving to protect the adhesive layer 2 prior to the actual use thereof

and of the foil 1, is, for a illustrative purpose, shown in dotted lines.

In accordance with the present invention, a translucent/ transparent layer 4 has been placed between the foil 1 itself and the adhesive layer 2, said layer 4 e.g. consisting of bencotriasole or benzophone, and being impermeable or substantially impermeable to ultraviolet rays, the main purpose and side effects of which being described in the following in connection with figure 2 in association with figure 3. In the following, the layer 4 will - due to the above-mentioned properties thereof - be called a UV-barrier layer.

The material of the UV-barrier layer 4 is not critical for the present invention and the desired properties thereof, namely to prevent passage of ultraviolet rays or to prevent substantial penetration of such rays, respectively, may in principle be achieved by means of filter materials and/or by means of ultraviolet absorption means available on the market in many translucent/transparent types based on stopping, filtration and/or absorption.

Now, reference is made to figure 3.

Because the letter R shown is composed of two foils having different colour, the two foils from which the letter portions have been cut, are denoted 5 and 5', respectively.

The internal and external R-contour portions 5' in correctly facing positions (with regard to the backing paper 3) may e.g. be made from a red-coloured foil according to figure 1, while the R-core 5 may have a blue colour and take a mirror-symmetrical position relative to the R-contour portions 5' .

Reference is now made to figure 2 in connection with figure

3.

In figure 2, reference numeral 6 denotes a disc of translucent/transparent material and which may be incorporated as a carrying member in e.g. a name and/or advertisement signboard, or which may be constituted by a window pane or similar glass or plexiglass pane in a building, a vehicle etc.

The R-contour foil portions 5' having the assumed red colour are, according to figure 2, adhered onto one side 6' of the glass disc/signboard 6, while the R-core foil piece 5 having the assumed blue colour are adhered onto the opposite side 6" of the glass disc/signboard 6 in such a manner that the stylistic R-letter, as seen toward the side 6' of the signboard/glass disc 6, appears as illustrated in figure 3 (opposing letter pieces 5,5' wherein 5 is facing mirror-symmetrically in relation to 5', the letter pieces 5' surrounding the letter piece 5).

Two known light sources 7,7' for the generation of black light and illumination of the fluorescent foils 5,5', are placed one at each side of the glass disc/signboard 6.

When both these light soruces 7,7' are on, each illuminating a foil letter 5 or 5', respectively, of its own, with black light, i.e. the signboard/glass disc 6 is being illuminated from opposite sides, both foil pieces 5,5' will glow neon-like, but in a different colour (blue and red, respectively).

As black light sources 7,7', several different kinds may be used, e.g. projectors, search-lights, fluorescent lamps etc.

Fluorescent foils 5,5' having UV-barrier layer 4, or name and/or advertisement signboards, respectively, based on such

foils, render possible very special advertising-technical effects:

One assumes that the projectors, search-lights etc. 7,7' for black light according to figure 2 are coupled to an electrical time-lag relais adapted to be activated/ deactivated in accordance with a certain program, using technology known per se.

In an elucidating example, one takes as a starting-point a time of 9 seconds starting with said relais activating light source 7', which illuminates the signboard/glass disc 6 in the direction toward the outer face 6', thereby bringing the red colour of the fluorescent foil 5' to glow neon-like. Because of the UV-barrier layer 4 of the foil 5, the blue colour of the foil 5 will not be activated. This condition may e.g. last for 2 seconds.

After the expiry of said 2 seconds, the time-lag relais is adapted to disconnect the light source 7' and to connect the light source 7, the latter than bringing the blue colour of the fluorescent foil 5 to glow neon-like. Because of the UV-barrier layer 4 of the foil 5', the red colour of the fluorescent foil 5' will not be activated. This condition also may last for 2 seconds.

The time-lag relais may thereafter be adapted to connect both light sources simultaneously, activating both foils 5,5' at the same time and giving maximum advertising effect having a three-dimensional special effect far exceeding the actual total thickness of the two foils 5,5' and the glass disc 6. Within this time-controlled program a pause of 2 seconds may thereafter be incorporated, no illumination whatsoever taking place. Then, the above-mentioned "variation" time of 9 seconds is terminated. Such a periodical alternating between single colours/letter

portions and two-colour combination may take place according to a 24 hours program of operation.

Adhesive fluorescent foils cut to letters, letter combinations, figures, logograms, emblems etc. are always illuminated i the direction toward the fluorescent layer of colouring matter.

In signboards made in accordance with the invention, the mutually opposing differently coloured foil pieces 5,5' adhered onto opposite sides of a disc-like translucent/ transparent carrying signboard element 6 will ordinarily have the form of letter and/or figure constituents completing each other or cooperating in one way or the other, especially when the two foil pieces 5,5' are illuminated simultaneously. However, if one disregards the momentary effect, there is also achieved over a certain time (e.g. 9 seconds) a cooperating completing effect of a great advertisting value (attracts great attention due to its originality and aesthetically attractive "radiation").

C l a i m s

1. Fluorescent foil (5,5'), especially of the kind made from a translucent/transparent foil material admixed colouring matter and fluorescent matter, c h a r a c t e r i z e d i n that the foil (5,5'), at least at one side thereof, is provided with a translucent layer (4), e.g. consisting of bencotriasole or benzophone, which is impermeable or substantially impermeable to ultraviolet rays (UV-rays).

2. Fluorescent foil (5,5') according to claim 1, c h a r a c t e r i z e d i n that the translucent layer (4) which is impermeable or substantially impermeable to ultraviolet rays, is placed between the fluorescent foil (5, 5') and a translucent adhesive layer (2).

3. Signboard, e.g. name and/or advertisement signboard, comprising a translucent disc (6) having a fluorescent foil (5,5') as defined in claim 1 or 2 attached thereto, c h a r a c t e r i z e d i n that the translucent disc (6), at both sides, has attached thereto fluorescent foils (5,5') having different colour or colours at the two sides, and being cut to letter, figure or other constituents, which at one side (6') of the translucent disc (6) have been attached in correctly facing design, while the cooperating/ completing letter, figure or other constituents in opposing positions on the other side (6") of the translucent disc (6) are attached in a mirror-symmetrical relationship thereto.

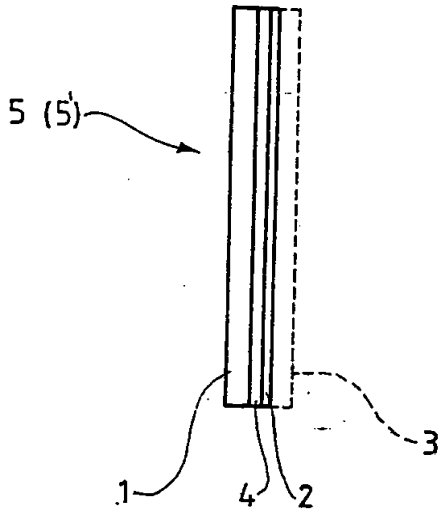

Fig.1

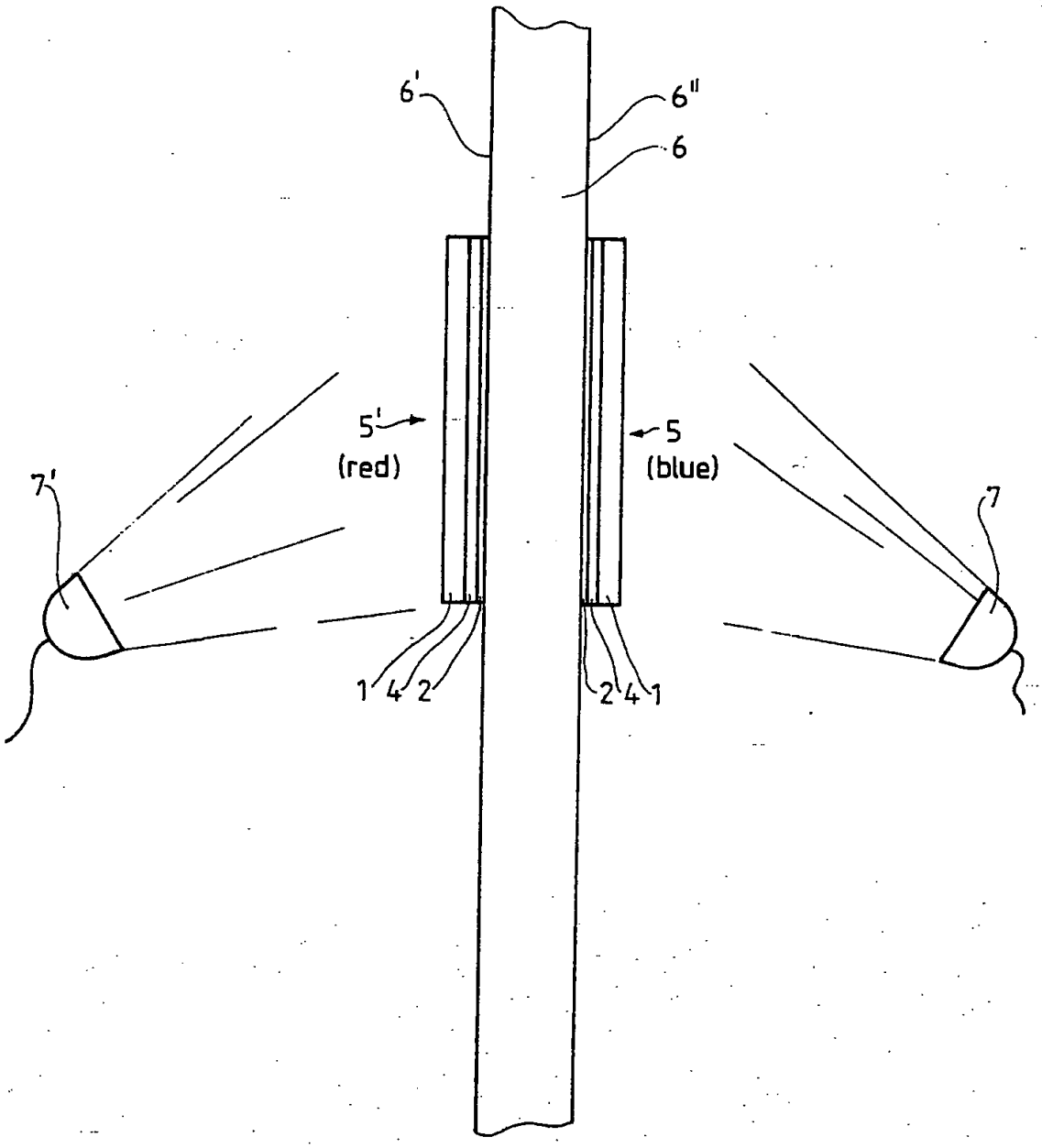

Fig. 2

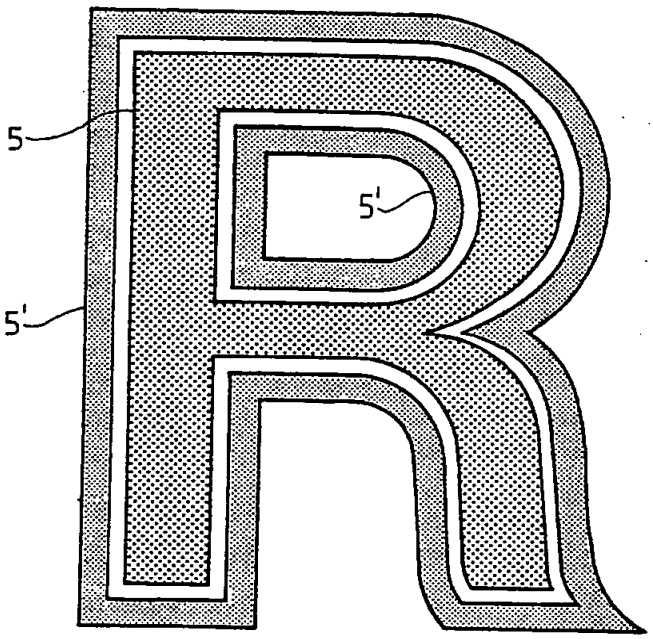

Fig.3

INTERNATIONAL SEARCH REPORT

International Application No PCT/NO 92/00111

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC5: G 09 F 13/20, G 09 F 13/42

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
IPC5	G 09 F

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched[8]

SE,DK,FI,NO classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category *	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
X	US, A, 2878606 (L. MEIER) 24 March 1959, see column 2, line 36 - column 4, line 31; figure 8 --	1-2
X	US, A, 3452464 (M. ROBINSON) 1 July 1969, see column 2, line 15 - column 3, line 72; figures 1-4 --	1
X	US, A, 4213153 (F.P. SCHÄFER) 15 July 1980, see column 2, line 5 - column 3, line 3 --	1
A	US, A, 4913946 (SALA ET AL) 3 April 1990, see abstract --	2

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
9th October 1992	13 -10- 1992
International Searching Authority	**Signature of Authorized Officer**
SWEDISH PATENT OFFICE	Roland Landström ROLAND LANDSTRÖM

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
P,A	WO, A1, 9120070 (H.G. OSTHASSEL) 26 December 1991, see figure 1; claims 1-2	1-3
X	GB, A, 2204981 (J.P. YEO) 23 November 1988, see page 1, line 1 - page 4, line 22; abstract; figures 1-2	1-2
A		3
A	US, A, 1933216 (J.G. JUHASZ) 31 October 1933, see page 2, line 2 - line 14; figures 1-4	3

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. PCT/NO 92/00111

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the Swedish Patent Office EDP file on 28/08/92
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Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US-A- 2878606	59-03-24	NONE		
US-A- 3452464	69-07-01	NONE		
US-A- 4213153	80-07-15	DE-A-C-	2739081	79-03-15
US-A- 4913946	90-04-03	DE-A-	3778672	92-06-04
		EP-A-B-	0273997	88-07-13
		JP-A-	63175089	88-07-19
WO-A1- 9120070	91-12-26	AU-D-	8066291	92-01-07
GB-A- 2204981	88-11-23	NONE		
US-A- 1933216	33-10-31	NONE		